

WHAT IS CLAIMED IS:

1. A process for manufacturing a valve, comprising:
casting a valve body having a valve seat surface without machining the valve seat surface;
molding a plug element without machining, having a first end portion and a second end portion, wherein the plug element is configured and dimensioned for rotatable receipt within the valve body; and
overmolding at least one deformable sealing ridge onto the plug element, wherein the at least one deformable sealing ridge is positioned so as to engage the valve seat surface, whereby an effective seal is created between the plug element and the valve body when the plug element is biased into the valve body.
2. The process for manufacturing a valve of claim 1, wherein the casting of the valve body includes forming a conical cavity in the valve body with an interior surface defining the valve seat surface, wherein the molding of the plug element includes creating a conical exterior surface and wherein the overmolding of the at least one deformable sealing ridge includes overmolding the at least one deformable sealing ridge onto the conical exterior surface of the plug element.
3. The process for manufacturing a valve of claim 2, wherein the casting of the valve body further includes utilizing aluminum, wherein the molding of the plug element body further includes utilizing a thermoplastic and wherein the overmolding of the at least one deformable sealing ridge further includes utilizing silicone rubber.
4. The process for manufacturing a valve of claim 2, wherein the overmolding of the at least one deformable sealing ridge further includes extending at least one deformable sealing ridge about a circumference of the first end portion of the plug and further includes extending at least one deformable sealing ridge about a circumference of the second end portion of the plug.

5. The process for manufacturing a valve of claim 4, wherein the overmolding of the at least one deformable sealing ridge further includes extending at least two deformable sealing ridges between the at least one deformable sealing ridge located about the circumference of the first end portion of the plug and the at least one deformable sealing ridge located about the circumference of the second end portion of the plug.

6. The process for manufacturing a valve of claim 5, wherein the at least two deformable sealing ridges includes at least three deformable sealing ridges extending between the at least one deformable sealing ridge located about the circumference of the first end portion of the plug and the at least one deformable sealing ridge located about the circumference of the second end portion of the plug.

7. The process for manufacturing a valve of claim 5, wherein the at least two deformable sealing ridges are extending in perpendicular relationship between the at least one deformable sealing ridge located about the circumference of the first end of the plug and the at least one deformable sealing ridge located about the circumference of the second end of the plug.

8. The process for manufacturing a valve of claim 2, wherein the casting of the valve body includes forming a first opening in a side of the conical cavity in fluid communication with an exterior of the valve body and forming a second opening in a base of the conical cavity in fluid communication with the exterior of the valve body, wherein the molding of the plug element includes forming an orifice in a side of the plug element and forming an opening in a narrow end of the plug element with fluid communication between the orifice and the opening in the narrow end of the plug element, whereby a rotational orientation of the plug element within the conical cavity of the valve body such that when the first opening formed in the side of the conical cavity and the orifice in the side of the plug element at least partially overlap each other will create a fluid flow path through the valve and a rotational orientation of the plug within the conical cavity of the valve body such that when the first opening formed in the side of the conical cavity and the orifice in the side of the plug element do not overlap each other will preclude fluid flow through the valve.

9. The process for manufacturing a valve of claim 8, wherein the overmolding of the at least one deformable sealing ridge further includes extending a first set of deformable sealing ridges about a circumference of the plug on either side of the orifice in the side of the plug element and further includes extending a second set of deformable sealing ridges between the first set of deformable sealing ridges.

10. The process for manufacturing a valve of claim 9, wherein the extending a second set of deformable sealing ridges further includes three deformable sealing ridges, wherein a first deformable sealing ridge of the three deformable sealing ridges is positioned above the orifice in the side of the plug element and a second deformable sealing ridge of the three deformable sealing ridges is positioned below the orifice and a third deformable sealing ridge is positioned equidistant between the first deformable sealing ridge and the second deformable sealing ridge.

11. The process for manufacturing a valve of claim 8, further comprising positioning a biasing mechanism between the plug element and the conical cavity for the valve body.

12. The process for manufacturing a valve of claim 8, further comprising positioning a compression spring between the plug element and the conical cavity for the valve body.

13. A process for manufacturing a rotatable plug element for receipt in a conical cavity formed in a valve body, wherein an opening in a side of the conical cavity is in fluid communication with an exterior of the valve and an opening in a base of the conical cavity is in communication with the exterior of the valve, comprising:

molding a plug element without machining, wherein the plug element includes a rigid support structure with a conical exterior surface and a hollow interior with a first opening on a side of the rigid support structure and a second opening on a narrow end of the rigid support structure; and

molding of an array of pliable sealing ridges attached onto the conical exterior surface of the rigid support structure including at least two circumferentially extending pliable sealing ridges with at least one pliable sealing ridge of the at least two circumferentially extending pliable sealing ridges positioned on each side of the first opening formed in the side of

the rigid support structure.

14. The process for manufacturing a valve of claim 13, wherein the molding of the array of pliable sealing ridges includes at least one closely spaced paired configuration.

15. The process for manufacturing a valve of claim 13, wherein the molding of the array of pliable sealing ridges further includes extending at least two pliable sealing ridges between the at least two circumferentially extending pliable sealing ridges and positioned on either side of the first opening formed in the side of the rigid support structure.

16. The process for manufacturing a valve of claim 15, wherein the at least two circumferentially extending pliable sealing ridges includes at least one third circumferentially extending pliable sealing ridge.

17. The process for manufacturing a valve of claim 16, wherein the at least one third circumferentially extending pliable sealing ridge is equidistantly spaced between the at least two circumferentially extending pliable sealing ridges.

18. The process for manufacturing a valve of claim 13, wherein the molding of the plug element without machining includes utilizing a thermoplastic and the molding of the array of pliable sealing ridges includes utilizing silicone rubber.

19. The process for manufacturing a valve of claim 13, wherein the molding of the array of pliable sealing ridges includes forming an overmolding with the array of pliable sealing ridges that extends across a substantial portion of the conical exterior surface of the rigid support structure.

20. The process for manufacturing a valve of claim 19, wherein the molding of the plug element without machining includes undercutting portions of the rigid support structure located directly below the overmolding formed from the array of pliable sealing ridges to increase depth of the overmolding below at least one pliable sealing ridge of the array of pliable

sealing ridges.

21. The process for manufacturing a valve of claim 20, wherein the molding of an array of pliable sealing ridges includes forming the array of the pliable sealing ridges so that the array of the pliable sealing ridges extends above the rigid support structure of the plug element by about 0.008 inches.

22. A process for manufacturing a valve, comprising:

casting an aluminum valve body without machining, wherein the aluminum valve body includes a conical cavity formed in the aluminum valve body, wherein an opening in a side of the conical cavity is in fluid communication with an exterior of the aluminum valve body and an opening in a base of the conical cavity is in fluid communication with the exterior of the aluminum valve body;

molding a thermoplastic plug element without machining, wherein the plug element is configured and dimensioned for rotatable receipt within the conical cavity for the aluminum valve body, wherein the molding of the thermoplastic plug element further includes forming an orifice in a side of the plug element that is alignable with the opening in a side of the conical cavity for the aluminum valve body and in fluid communication therewith and the orifice in a side of the plug element is alignable with an opening in a narrow end of the thermoplastic plug element and in fluid communication therewith;

overmolding pliable material without machining, having a plurality of sealing ridges protruding therefrom, wherein at least one sealing ridge of the plurality of sealing ridges extends circumferentially about the plug element above the orifice in the side of the plug element and at least one sealing ridge of the plurality of sealing ridges extends circumferentially about the plug element below the orifice in the side of the plug element and at least two sealing ridges of the plurality of sealing ridges extend between the circumferentially oriented sealing ridges with at least one sealing ridge on each side of the orifice in the side of the plug element; and

positioning a biasing mechanism between the plug element and the conical cavity for the cast aluminum valve body, whereby an effective seal is achieved between the plurality of sealing ridges and the unmachined surface of the opening in the side of the conical cavity for the aluminum valve body.